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10/762,087	01/20/2004	Sejun Song	2705-288	4606

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EXAMINER	
CHU, GABRIEL L	

ART UNIT	PAPER NUMBER
2114	

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/762,087	SONG ET AL.	
	Examiner	Art Unit	
	Gabriel L. Chu	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20040120*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 3, 9, 13, 14, 15 objected to because of the following informalities:

Referring to claim 3, "the outages" is understood to refer to "the planned operational outages", correcting for an unclear target of antecedence.

Referring to claim 9, "the error codes that are generated in association with the outages" has no antecedent basis. While the error codes were generated, and they were associated with the outages, there was no prior indication that the error codes were generated in association with the outages. For the purpose of examination, this claim is understood to refer to "capturing the error codes associated with the outages" as indicated in claim 1.

Referring to claim 13, "the first and second routing processor" is understood to refer to "the first routing processor and second backup routing processor".

Referring to claim 14, "possible software" is understood to refer to "possibly software".

Referring to claim 15, "possible software... worse case" is understood to refer to "possibly software... worst case".

Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because the same reference character has been used to designate different elements.

For example, in figure 1, all the NMS's are labeled as 12. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 22-39 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.** Referring to claims 22-39, in view of paragraph 164 of the specification's pre-grant publication, it is unclear if the means and the medium is limited to storage media storing instructions executed to perform the functionality of the invention. To overcome this rejection, language must be incorporated that limits the claim to this effect.

5. **Claims 1-39 rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility.** Referring to claims 1-39, the final result achieved by the claimed invention is useful, concrete, and tangible. The end result is the classification of

errors without a useful, concrete, and tangible application. Paragraph 156 of the pre-grant publication discloses that such a result, however unclaimed, may be the generation of reports showing the different categories of software and hardware outages.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 1, 6, 16, 22, 27, 31, 36 rejected under 35 U.S.C. 102(e) as being anticipated by US 20030172153 to Vaver.** Referring to claim 1, 16, 22, 31, Vaver discloses a method for detecting outages, comprising: capturing error codes associated with outages in a network processing device (From paragraph 44, "Downtime analysis is performed by categorizing module, node, or path downtime according to the root cause of failure.");

and automatically classifying the error codes into software caused outages and hardware caused outage categories (Further from paragraph 44, "For example, think of a pie chart showing the percentage of overall path downtime caused by failure in each

of the various types of modules. Or for paths from node A to B, a chart showing the percentage of downtime caused by hardware failures versus software failures. These are only two of many possible scenarios.").

9. Referring to claim 6, 27, 36, Vaver discloses identifying the software caused outages and the hardware caused outages for multiple individual router processors in the network processing device (From the abstract, "A system for monitoring the reliability of a network includes a network management system that gathers information relating to modules, nodes and paths in the network." From paragraph 20, "Networks consist of a collection of nodes interconnected by transmission links, and herein may be entire networks or portions of larger networks. The transmission links may be any means for transmitting signals, including fiber optic cable, copper wiring, microwave signals, satellite up- and down-links and the like. Networks also include relay stations along transmission links for receiving and retransmitting signals, in order to, for example, increase the signal's strength. Signals are the impulses, electrical, optical, or other, that represent the content of the transmission. Signals may be analog, digital, or a combination of the two. At network nodes, signals may be added to the network. Such signals may be new signals or signals transferred from other networks. Signals may also be removed from the network if the node is the signal's destination. Signals may also be redirected to other networks for further routing to their destinations. Along transmission links, signals may be monitored for any number of reasons, such as to monitor the status of the network.").

10. **Claims 10-12 rejected under 35 U.S.C. 102(e) as being anticipated by US 6594786 to Connelly et al.** Referring to claim 10, Connelly discloses a method for measuring software outages, comprising: monitoring outages in a network processing device; monitoring manually initiated commands to the network processing device; and distinguishing manually initiated operational outages (From line 25 of column 12 of Connelly, "If a customary shutdown command, such as a Unix "/sbin/shutdown" or Windows NT "shutdown", is used to halt the system, the downtime is treated as "planned.") from other software outages and hardware outages (From line 9 of column 13, "Inferred events are generated as follows: system downtime implies node downtime at the time of the system downtime; system downtime implies package downtime for all packages known to be running on the specified system; and system downtime implies cluster downtime if the given system was the sole remaining system in the cluster, or the sole available system in a cluster." From line 31 of column 5, "A package is a cluster-aware software element, such as a software application along with its programs, resources, and files, which may be restarted on another node in the event of a failure.") according to the monitored manually initiated commands.

11. Referring to claim 11, Connelly discloses capturing error codes associated with at least some of the outages; storing the error codes in persistent memory; storing the manually initiated commands in persistent memory; and automatically analyzing the stored error codes and manually initiated commands to distinguish planned operational software outages from unplanned operational outages (From line 31 of column 7, "The HA agent daemon 30 preferably runs at the user root level as a daemon process under

the operating system of the monitored system. During normal operations, the HA agent daemon 30 writes a timestamp to the status file 36 at a programmable interval, such as 30 seconds. If the monitored system is halted using the "shutdown" command, the HA agent daemon 30 will prompt the operator for a reason for the shutdown, write the reason to the shutdown log 34, send a "planned shutdown" event to the HA server 22, and update the event log 32. An exemplary list of shutdown reasons is listed in Table I below. The HA agent daemon 30 is configured to restart automatically at boot time. Upon restart, the HA agent daemon 30 checks the shutdown log 34 to see if a system event was generated (graceful shutdown) when the monitored system went down. If so, the shutdown log 34 is deleted or cleared and a "restart" event is sent to the HA server 22. If no "shutdown" event was sent (crash), then the timestamp in the status file 36 is used to compute the approximate time the system went down and both a "unplanned shutdown" and a "restart" event are sent to the HA server 22." Further see Table I wherein both planned and unplanned outages are disclosed.).

12. Referring to claim 12, Connelly discloses capturing information associated with a mean time between failures or a number of accumulated failures for the manually initiated operational outages, software outages, and hardware outages (From the equation at line 1 of column 12, "where Total_period is the period during which the entity has been monitored, and Downtime_period is the duration of an individual outage event, and there were K outages for the period.").

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. **Claim 2, 3, 7-9, 17, 23, 24, 28, 29, 30, 32, 33, 37, 38, 39 rejected under 35 U.S.C. 103(a) as being unpatentable over US 20030172153 to Vaver as applied to claim 1, 16, 22, 31 above, and further in view of US 6594786 to Connelly et al.**

Referring to claim 2, 17, 23, 32, although Vaver does not specifically disclose automatically classifying at least some of the outages as planned operational outages and unplanned operational outages, classifying outages as planned and unplanned is known in the art. An example of this is shown by Connelly from line 11 of column 12, "The HA meter M distinguishes two types of system downtime: planned and unplanned." A person of ordinary skill in the art at the time of the invention would have been motivated to classify outages as planned or unplanned because from line 54 of column 1 of Connelly, "Availability, as a measure, is usually discussed in terms of percent uptime for the system or application based on planned and unplanned downtime. Planned downtime results from scheduled activities such as backup, maintenance, and upgrades. Unplanned downtime is the result of an unscheduled outage such as system crash, hardware or software failure, or environmental incident such as loss of power or natural disaster. Measuring the extent, frequency, and nature of downtime is essential to the scientific management of enterprise IT resources.", and from paragraph 5 of Vaver, "to provide progressively more accurate network reliability information, systems

are needed that more comprehensively gather and analyze data associated with network modules and paths."

15. Referring to claim 3, 24, 33, Vaver in view of Connelly discloses classifying outages as planned operational outages when a maintenance or planned upgrade command is detected and no error codes are associated with the outages (From line 25 of column 12 of Connelly, "If a customary shutdown command, such as a Unix "/sbin/shutdown" or Windows NT "shutdown", is used to halt the system, the downtime is treated as "planned.").

16. Referring to claim 8, 29, 38, Vaver in view of Connelly discloses identifying the outages as unplanned operational outages when a manual reset command is associated with the outages (From line 36 of column 7 of Connelly, "If the monitored system is halted using the "shutdown" command, the HA agent daemon 30 will prompt the operator for a reason for the shutdown, write the reason to the shutdown log 34, send a "planned shutdown" event to the HA server 22, and update the event log 32. An exemplary list of shutdown reasons is listed in Table I below." Wherein user-identifiable causes include unplanned operational outages such as failure.).

17. Referring to claim 7, 28, 37, although Vaver does not specifically disclose computing an Accumulated Outage Time (AOT) and Number of Accumulated Failures (NAF) for the software caused outages and the hardware caused outages, this is known in the art. An example of this is shown by Connelly from the equation at line 1 of column 12, "where Total_period is the period during which the entity has been monitored, and Downtime_period is the duration of an individual outage event, and there were K

outages for the period." Applicant will note that the summation determines AOT and the number k denotes NAF. A person of ordinary skill in the art at the time of the invention would have been motivated to calculate AOT and NAF because from line 54 of column 1 of Connelly, "Availability, as a measure, is usually discussed in terms of percent uptime for the system or application based on planned and unplanned downtime. Planned downtime results from scheduled activities such as backup, maintenance, and upgrades. Unplanned downtime is the result of an unscheduled outage such as system crash, hardware or software failure, or environmental incident such as loss of power or natural disaster. Measuring the extent, frequency, and nature of downtime is essential to the scientific management of enterprise IT resources.", and from paragraph 5 of Vaver, "to provide progressively more accurate network reliability information, systems are needed that more comprehensively gather and analyze data associated with network modules and paths."

18. Referring to claim 9, 30, 39, Vaver discloses using captured error identifiers to classify outages (From paragraph 44, "Downtime analysis is performed by categorizing module, node, or path downtime according to the root cause of failure."). Although Vaver does not specifically disclose capturing the error codes associated with the outages and storing the error codes in a local persistent memory, storing error identifiers local to the error source is known in the art. An example of this is shown by Connelly from line 32 of column 7, "The HA agent daemon 30 preferably runs at the user root level as a daemon process under the operating system of the monitored system. During normal operations, the HA agent daemon 30 writes a timestamp to the

status file 36 at a programmable interval, such as 30 seconds. If the monitored system is halted using the "shutdown" command, the HA agent daemon 30 will prompt the operator for a reason for the shutdown, write the reason to the shutdown log 34, send a "planned shutdown" event to the HA server 22, and update the event log 32." A person of ordinary skill in the art at the time of the invention would have been motivated to store the error code locally because, from line 44 of column 7 of Connelly, "Upon restart, the HA agent daemon 30 checks the shutdown log 34 to see if a system event was generated (graceful shutdown) when the monitored system went down. If so, the shutdown log 34 is deleted or cleared and a "restart" event is sent to the HA server 22. If no "shutdown" event was sent (crash), then the timestamp in the status file 36 is used to compute the approximate time the system went down and both a "unplanned shutdown" and a "restart" event are sent to the HA server 22.", i.e., so that a local failure does not remove the outage from consideration. Further because from line 54 of column 1 of Connelly, "Availability, as a measure, is usually discussed in terms of percent uptime for the system or application based on planned and unplanned downtime. Planned downtime results from scheduled activities such as backup, maintenance, and upgrades. Unplanned downtime is the result of an unscheduled outage such as system crash, hardware or software failure, or environmental incident such as loss of power or natural disaster. Measuring the extent, frequency, and nature of downtime is essential to the scientific management of enterprise IT resources.", and from paragraph 5 of Vaver, "to provide progressively more accurate network reliability information, systems

are needed that more comprehensively gather and analyze data associated with network modules and paths."

19. **Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over US 6594786 to Connelly et al. as applied to claim 11 above, and further in view of US 20030172153 to Vaver.** Referring to claim 14, Connelly discloses errors that are possibly hardware caused outages or software caused outages (See Table I.). Although Connelly does not specifically disclose classifying the error codes that are possibly hardware caused outages as hardware outages and identifying the error codes that are possible software caused outages as software outages, this is known in the art. An example of this is shown by Vaver, From paragraph 44, "Downtime analysis is performed by categorizing module, node, or path downtime according to the root cause of failure. For example, think of a pie chart showing the percentage of overall path downtime caused by failure in each of the various types of modules. Or for paths from node A to B, a chart showing the percentage of downtime caused by hardware failures versus software failures. These are only two of many possible scenarios." A person of ordinary skill in the art at the time of the invention would have been motivated to classify by hardware or software causation because from line 54 of column 1 of Connelly, "Availability, as a measure, is usually discussed in terms of percent uptime for the system or application based on planned and unplanned downtime. Planned downtime results from scheduled activities such as backup, maintenance, and upgrades. Unplanned downtime is the result of an unscheduled outage such as system crash, hardware or software failure, or environmental incident such as loss of power or natural

disaster. Measuring the extent, frequency, and nature of downtime is essential to the scientific management of enterprise IT resources.", and from paragraph 5 of Vaver, "to provide progressively more accurate network reliability information, systems are needed that more comprehensively gather and analyze data associated with network modules and paths."

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See notice of references cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gabriel L. Chu whose telephone number is (571) 272-3656. The examiner can normally be reached on weekdays between 8:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gabriel L. Chu
Examiner
Art Unit 2114

gc